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Animal Health and Husbandry in Colonial Economic Development

THE place of Animal Health and Husbandry in Colonial Economic Development was the theme chosen by Sir Hilton Poynton, Deputy Under Secretary of State, Colonial Office, when he addressed the Royal (Dick) School of Veterinary Studies on January 10th. Sir Hilton was delivering the Inaugural Lecture of the new course for the Diploma in Tropical Veterinary Medicine at the School. As most readers will know, the course is being resumed, after an interval of several years, with assistance from the Government.

A message of appreciation and good wishes from Mr. Alan Lennox-Boyd, Secretary of State for the Colonies, was read by Sir Hilton to a distinguished gathering which included Mr. H. Sumner, President of the R.C.V.S. The message read:—

" On the occasion of the inauguration of this new course for the Diploma in Tropical Veterinary Medicine, I should like to express my great satisfaction at the resumption of this important course of study after an interval of several years. I know that this satisfaction is shared by the Governments of the territories with which I am concerned and by the Veterinary Services in those territories. In wishing the course every success I should like, on behalf of my predecessors, to pay tribute to the assistance which we have received in the past from the Royal (Dick) School of Veterinary Studies, and which I know we may expect to receive in even greater measure in the future. I send to the staff and to all undertaking the course my warmest good wishes."

Sir Hilton Poynton then delivered his lecture as follows:—

You may feel that it is perhaps rather presumptuous for me, born and grazed in the classical pastures of Oxford University; an Administrative Civil Servant, and an Englishman to boot, to come here to Edinburgh to address a professional audience about the importance of your own profession. Might it not perhaps have shown a more becoming modesty on my part if I had asked you to address me on this subject rather than the reverse? Well, perhaps it would, but in fact the Administrative Officer and the professional each has his part to play. It may perhaps be convenient if, before I get to grips with the subject, I give you a very brief summary—a sort of " Table of Contents "—of the ground I want to cover. The subject, if treated as fully as it deserves, would be vast and I have to be selective. I propose, therefore, first to define the territorial scope of my lecture and say something of the administrative and political setting in which the work of the professional services—veterinary and other—has to be carried on; secondly to attempt some assessment of the economic and social importance of animal health and husbandry in these territories, and its relationship to the work of other branches of administration; thirdly to say something about the men and women in the Colonial Veterinary Services, including Veterinary Research, and the work they are doing.

The Territorial Background

In speaking of " Colonial " economic development I have in mind the territories with which the Colonial Office is concerned, whether they are strictly speaking Colonies or Protectorates or anything else. The distinction is of no consequence in our present context. I am not, in other words, concerned with foreign countries or even with the independent members of the British Commonwealth, though in drawing this distinction I do not want to imply that the veterinary or for that matter other specialist problems of Colonial territories are different from those of independent Commonwealth or foreign countries merely by virtue of their differing constitutional status. Of course not! And there is wide scope for international collaboration between professional officers and between Governments in such matters. But there is at least this difference between the Colonial territories and other territories, namely that Her Majesty's Government in the United Kingdom, through the Colonial Office, have a direct responsibility to Parliament for those territories which they do not have for others. The territories of which I am speaking are some 45 in number grouped under 38 separate Governors or equivalent officers, with an aggregate area equal to about half the size of the

United States and an aggregate human population of about 80,000,000. Almost all these territories are tropical or sub-tropical, the only important exception for present purposes being the Falkland Islands which as you will know are mainly dependent on sheep farming. Climatically, they range from extreme aridity with rainfall less than 10 inches a year to areas, such as in parts of West Africa, where the annual rainfall is measured in hundreds of inches, but all falls within about five months. Some two-thirds of this total Colonial Empire by area and some three-quarters by population are in tropical Africa and only came under British influence within the last 60 or 70 years. These territories had been by-passed by the normal march of civilisation, and we had to start in them virtually from scratch. Each of them has its own problems and each territory differs from the other in almost every characteristic, whether it be size, population, natural resources, endemic diseases, or social and political development. When we reflect that the comparatively short period of British administration has been interrupted by two World Wars and the intervening depression, and that in many respects we are still suffering from the aftermath of World War II it is perhaps remarkable that we have been able to do as much as we have.

Each territory has its own Government with all the normal functions of a Government though with varying degrees of autonomy. The staff who go out to them, whether in the administrative or in the professional services, become the servants of the local Governments, drawing their salaries from funds voted by the local legislature, relying on votes of that legislature to provide them with the funds necessary to carry on the jobs which they have been recruited to do, and deriving their powers from locally enacted legislation. The departments, to an increasing extent, are coming under the control of local Ministers, or Members in charge of particular portfolios. I mention this fact because it must not be thought that Colonial development is something which can be directly controlled or dictated by the Secretary of State from London. We can give advice and financial help; we can help by recruiting staff; we can collaborate with the universities and the veterinary profession over training, as we have done in this present case, and seek their professional advice; but we have to a very large extent already surrendered the direct power of control of local policy and its execution to the local Governments.

The Economic Aspects

As to the economic importance of animal health and husbandry in the Colonial Empire I suggest that there are three aspects to be considered. First there is the producers' interest; that is to say the direct return to the farmer for meat, milk or hides. Secondly there is the reciprocal interest of the consumer, and here I am thinking particularly of the improvement in nutrition provided by milk and meat which in turn increases the economic efficiency of the population by improving their health and their working power. Thirdly there is the indirect benefit to agriculture generally from the maintenance and improvement of soil fertility which comes from the incorporation of livestock in the farming system and which can raise substantially the return from arable crops.

I do not know—I do not expect anybody knows—what is the total population of " economic " animals in the Colonial territories, but it may be worth mentioning as some indication of the scale of the problem that in the African Colonial territories alone there are estimated to be some 23,000,000 cattle, which I believe compares with about 10,000,000 in the United Kingdom and 95,000,000 in the United States of America. It also compares with a human population in the same African Colonial territories of about 60,000,000. In Nigeria alone it is estimated that animal products of all kinds are worth about £20,000,000 annually.

The direct cash return from cattle and other animals may in some cases be the sole source of income; for example for the nomadic tribes in the pasture lands where cattle are the only practicable crop—like the Masai in East Africa. At the other end of the scale it may be little more than a minor supplementary source of income for the arable farmer. Hides and skins are a particularly important aspect of the cash return from animals, particularly in Africa. Since meat and milk are almost entirely locally consumed it is the hides and skins which are the most important export item from livestock. This is important not only as a source of income to the farmer, but because it brings wealth into the territory from outside. The total value of hides and skins exported from the Colonial territories is something over £7,500,000, which is accounted for mainly by Nigeria (£3,300,000), Tanganyika (£1,400,000), and Kenya (£1,400,000). The economic importance of milk and meat production is, of course, particularly great near areas of large concentrations of population (big towns or mines for example) and this is particularly true in parts of Nigeria (which alone accounts for some 33,000,000 of our total Colonial population) and in the West Indies which, though small, are all of them over populated. One of the ever-present problems is the rapid growth in population, and in many parts, particularly in Africa, there is serious malnutrition, and the form in which this is most apparent is undoubtedly protein deficiency. Here, then, at once, we can see the importance of efficient animal health and husbandry both for the production of meat and for the production of dairy produce. The Colonial Office is asked sometimes why the Colonies cannot develop an export market in meat to this country in order to make us less dependent on sources such as the Argentine. There are various reasons for this, partly, as you know, the prevalence of rinderpest in many parts of Africa which makes it impossible to ship carcase meat to this country, but also the fact that for some time to come all and more of the meat and meat products produced in the Colonies ought to be consumed locally in order to balance and improve the diet of a rapidly growing population.

I think all experts would agree that increased consumption of animal products is desirable in almost every part of the Colonial Empire. At present this need is not being met entirely by local production.

There are substantial imports into many Colonial territories. The Gold Coast, for example, imports meat to the value of £1,400,000 a year and £600,000 worth of condensed milk. The figures for Trinidad are about the same and in general imports of meat are increasing steadily; yet for most Colonial territories it would be much cheaper to develop local livestock industries than to increase imports, and a big increase in the animal populations is needed for this reason alone. The International Bank for Reconstruction and Development which made a general economic survey of Nigeria in 1954, reckons that there should be a four-fold increase in Nigeria, where the cattle population is already large. But even this will not of itself solve the human nutritional problems for—apart from any difficulties of increasing the livestock population rapidly—there is an economic snag, namely, that at present many of the population who are most in need of protein food are too poor to pay for it. And that in turn is due at least in part to their own low productivity caused by inadequate diet. We can only get out of this vicious circle by a kind of spiral process which is going on all the time though it is a slow one; and while most of the responsibility must fall upon the local Governments, the Home Government is playing an important part by the provision of funds under the Colonial Development and Welfare Acts.

The third element to which I referred in the economic importance of animals is their use to improve soil fertility. This is true whether the animals are for meat or milk, or whether they are draught animals on arable farms. This is one of the keys to the conversion from shifting cultivation with bush fallow to settled farming which is being forced by increasing populations. It has been put forward by the East African Royal Commission for example as one of the most important aspects of the East African land problem.

Relationship to Other Branches of Administration

These then are in brief the kind of problems which are involved in the economic aspects of animal health and husbandry, but clearly the veterinary service alone cannot provide the answer to them all. There must throughout be the closest collaboration with other departments. It is not enough merely that there should be a sound and sympathetic administration, including under this head a sympathetic Treasury and Finance Committee. Animals must eat; and in countries with climates that range from extreme drought to extremes of rainfall there must always be the closest collaboration with the Agricultural Departments in conserving the natural grasslands and creating man-made pastures. Overgrazing, trade tracks and tracks to water may all lead to soil erosion. Animals must drink; and this may involve close collaboration with the Geological Survey and other Departments concerned with the finding of new water resources and harnessing them for use. This may involve large-scale public works, but can very often be done by very simple devices if there is someone at hand who knows how. I have in mind some of the excellent work which I have seen in the Northern Territories of the Gold Coast, carried out by the Rural Water Supplies Department and the Community Development staff. Animals must be maintained in good health; and that is not only a matter for the veterinary service itself, but may again mean collaboration with other scientific services such as the entomologists. I am thinking particularly here of the problems of animal trypanosomiasis. But though the entomologist can presumably tell you all about the tsetse fly and its habits, it is the Forest Department who are best likely to be able to tell you what is going to happen if you clear the bush where the tsetse breed. You may well find that in destroying the tsetse you have also succeeded in destroying the soil or upsetting the rainfall.

Finally, assuming that the animals survive all the natural dangers by which their life is beset, arrangements have to be made for getting them or their products to market. This means not only efficient abattoirs, refrigeration facilities and so on, but it may mean again the collaboration of a great many Departments of Government which at first sight are remote from the work of the veterinary services. The movement of cattle itself is one such problem, in many parts of Africa and indeed elsewhere. Cattle are frequently moved from their grazing areas to the market on the hoof often many hundreds of miles and often passing through tsetse-infected areas. There is beautiful grazing land in the Southern Cameroons around Bamenda, but there is no railway and at present only an apology for a road for most of the way. Consequently cattle which set out as healthy animals are little more than peripatetic bags of bones by the time they reach Victoria or Tiko. Thus, the work of the Public Works Departments in the building of roads, and the provision of suitable transport on those roads when built, has a direct bearing upon the economics of animal health and husbandry.

The Colonial Veterinary Service

I should now like to turn more specifically to the work of the men and women in the various veterinary departments and research institutions in the Colonies and to try to tell you something of what they are trying to do and the difficulties which they are encountering in doing it. I could not say when for the first time a Colonial Government recruited a professional veterinarian, but it was early in the present century that the very high mortality and devastation caused by diseases of livestock focused attention on the need for the establishment of animal health services in the various territories.

The early pioneer veterinary officers were faced with a formidable and in some instances almost an impossible task. Their knowledge of the diseases which they were asked to control was strictly limited or indeed non-existent since during their professional training little attention was paid in those days to the study of tropical diseases of animals and their vectors. Indeed so little was known about many of them that there would have been no one to teach it. No laboratory facilities existed in any of the territories in those early days to assist the veterinary officers in the field with diagnosis and investigational work. Chemotherapy as we know it to-day was only in its infancy and on top of all these scientific and technical difficulties the local livestock owners were

illiterate, ultra-conservative, usually very suspicious about offers of help, and at times frankly antagonistic. In view of this, progress in the early days was, not surprisingly, slow, and the job was frustrating and discouraging. Yet in spite of all these difficulties the early pioneers did set about their task of assessing the disease problems and deciding what could be done about them with the limited resources available. That meant persuading finance committees to provide funds for expansion. Laboratories had to be designed, erected, equipped and staffed. Disease control legislation had to be drafted, explained and enforced. A great deal of propaganda work had to be done with the livestock owners which involved gaining a knowledge of local languages. In some cases departmental schools were established and the local people trained as lay assistants.

The Colonial Veterinary Service as such was first recognised as a separate unified service in 1935 and when the first list of members was published in 1937 it contained 108 names—108 professionally qualified officers—to serve an area with sparse communications half the size of the U.S.A. and an animal population of unknown numbers. There are now about 250 such officers serving in the Colonies. Meanwhile, in addition to a two-and-a-half-fold increase in the number of expatriate veterinary officers during the last 20 years, the number of locally trained officers is gradually growing. Almost every important territory has either a separate veterinary department or has veterinary officers in a combined Agricultural and Veterinary Department. Professional veterinary staff are employed in all our African territories, including Zanzibar and the South Africa High Commission territories; in Malaya, North Borneo, Sarawak and Hong Kong; in Fiji; in Jamaica, Trinidad, the Windward and Leeward Islands; British Guiana and British Honduras; in the Falkland Islands, in Cyprus and in Aden. There are also special inter-territorial research organisations employing such staff in East and West Africa. It is, indeed, in East and West Africa that the great majority of vacancies occur for professional staff. As some measure of the present rate of recruitment I might perhaps mention that during the last five years the Secretary of State has been asked to recruit 184 veterinary officers—an annual average of 37. We have actually succeeded in filling 166 of these vacancies including 39 during 1955, and generally speaking we are abreast of the demand. The most difficult people to recruit are really first-class veterinary research officers, of whom there is a shortage everywhere including, I understand, this country. To-day there are a dozen or more modern laboratories in being, fully equipped and producing millions of doses of standardised preparations, and carrying out valuable research. And there are several modern veterinary schools now in being for the training of lay and professional local staff. I think we can say to-day that all Colonial Governments are fully alive to the necessity for an efficient veterinary service and I am very glad that it has been possible to revive this diploma course at which we hope to have 12 students from various Colonial territories this year and to have a steady flow of students from the Colonies. In all there are some 40 veterinary students from the Colonial territories in the United Kingdom, and this year we have four scholars and one private student reading veterinary science here at Edinburgh; two from Kenya, one from Sierra Leone, one from the Gold Coast and one from Malaya.

The Nature of the Work To-day

Perhaps I might conclude with some comparison between past and present policy of the Colonial veterinary departments in general. In the past the main problem has been disease prevention and eradication rather than treatment of disease. The tendency was to concentrate on the control of the disease in the herd rather than on the individual animal. In general this has been pretty successful. Where means for protective vaccination have not been available treatment by chemotherapeutic methods or other means of control, *e.g.*, eradication of vectors, has been applied. Although many disease problems remain to be solved and protective vaccination still continues, the tendency is more to aim at the complete eradication of disease from defined geographical areas and greater attention is now being given to improvement in the quality of livestock and in the training of local people to adopt better methods of animal husbandry. With this end in view dozens of Government-controlled livestock improvement centres and farms are now in existence and some artificial insemination centres are in being. New and more productive types of animals are being evolved and a great deal of very valuable investigation is being carried out with a view to raising nutritional standards by improved pastures, fodder crops and water supplies in different environments. In addition to this, increasing attention is being given to the improvement in quality of livestock products, milk, butter, cheese, hides and skins and in the improvement of marketing methods.

Research

To the other duties of Colonial veterinary staffs such as field work, livestock development and education in livestock management, must be added research. Great strides have been made in recent decades, but the elimination of all the hazards associated with livestock farming in tropical and semi-tropical regions is a gradual process based largely on the knowledge acquired by research workers in a number of allied fields. An indication of what remains to be done can be given by reference to Nigeria, where a livestock and slaughter industry worth some £20,000,000 annually has been built up in little over 20 years. This trade, however, represents only 10 or 12 lb. of meat per head of the local population a year compared with consumption of many times this amount in European countries.

The intensive development which is so urgently necessary to ensure adequate milk and meat supplies to the growing populations in Colonial territories is based partly on the results of research which can be undertaken in the United Kingdom, for example the work of the Hannah Dairy Research Institute. But in the main the research must be carried out under local conditions of climate and environment. The pressing problems now awaiting solution by the veterinary research staffs employed in Colonial terri-

tories are sufficient to engage their attention for many years to come; the problems yet to be thrown up as organised livestock development is brought to new areas and the incidence of new diseases or the increasing danger of hitherto unimportant diseases emerges, will ensure a continuing need for suitably qualified research staff.

The investigations being undertaken at the present time cover a very wide range including, in addition to the purely veterinary work, studies in pasture improvement and the use of by-products in the preparation of foodstuffs, etc. Thus the veterinarian, who may be a bacteriologist, pathologist or virologist, joins forces with other research workers such as soil chemists, agronomists, biochemists, physiologists, parasitologists and entomologists in helping to open up the road to development in areas formerly closed to a soundly-based livestock industry.

There are a number of ways in which the research work is organised. In some Colonial territories it is carried out as one of the functions of the veterinary department, while in others separate research stations or larger research organisations have been established. Occasionally a particular problem requires solution and is tackled as a single project. For example, the need for the improvement of grassland to carry livestock which could otherwise not be reared economically in the region led to the setting up at Ebini in British Guiana of a grassland research station. Elsewhere, regional problems are tackled by large organisations equipped and staffed to deal with many aspects of veterinary research. One such organisation, the East African Veterinary Research Organisation, recently established at Muguga in Kenya, serves the whole of East Africa. Among its many responsibilities the Organisation has taken over the production of vaccines for the control of rinderpest and other diseases. The importance of vaccine production and the search for improved vaccines cannot be overstated. Well within living memory African cattle owners faced the prospect of losing up to 90 per cent. or even more of their herds in outbreaks of rinderpest. The risk of such sweeping losses has largely abated, but a constant watch must be maintained to ensure that science keeps pace with disease.

Conclusion

We all realise that there is much to be done and perhaps not much time to do it, but I think you may be assured not only that the administration is alive to the importance of the veterinary service, but that the veterinary service itself is enthusiastic, efficient and vigorous. At the Colonial Office itself we have a full-time Adviser on Animal Health—until recently Mr. R. J. Simmons, and, since Mr. Simmons's retirement, Mr. R. S. Marshall—both "Dick" men. We also have the Colonial Advisory Council of Agriculture, Animal Health and Forestry which dates from 1929, and the Committee for Colonial Agriculture, Animal Health and Forestry Research dating from 1945. In the field, there are increasingly close professional contacts between the officers in different territories not only in neighbouring British territories, but in neighbouring foreign territories as well, particularly the neighbouring Belgian and French territories. Whereas in the past there was virtually no contact except through the cumbrous diplomatic channels of London and Paris, or Brussels, it is quite a common thing to-day for scientific problems in the veterinary field or in other fields, to be discussed and settled direct, and we have standing machinery of one kind or another for international regional collaboration on such matters in Africa, the West Indies and the Pacific, to say nothing of the Food and Agriculture Organisation of the United Nations. May I, in conclusion, wish the Royal (Dick) School of Veterinary Studies every prosperity for the future?

HOLIDAY EXCHANGE

We have received a number of requests and suggestions for holiday exchange between veterinarians overseas and those in this country. Additionally, students and others have asked if hospitality, in some cases with professional experience, may be extended to them. Details are as follows:—

An Italian veterinary surgeon in Apecchio offers hospitality to the son of an English veterinary surgeon during the spring or summer of this year. He is married and has a three-year-old daughter. His wife speaks English.

An Italian veterinary surgeon wishes to arrange an exchange visit for his 19-year-old girl cousin. He lives in Ancona and offers hospitality to the daughter, or other relative, of an English colleague for a period during the summer.

An Italian veterinary surgeon living in Montebelluno (Treviso) wishes to arrange exchange visits for some of his seven sons aged 4 to 15 years, with sons of an English colleague.

A second year French veterinary student in Toulouse would like to stay with a British veterinary family as a paying guest for about three weeks between July 10th and September 1st. His first interest is in horses, and then in cattle. He has seen some practice in France.

A 26-year-old Swiss veterinary student in his seventh semester at Zürich University would like to stay in England some time between the end of February and the beginning of April.

He hopes to see an animal hospital or a small-animal practice in London, and speaks fairly good English.

The 21-year-old daughter of a French veterinary surgeon would very much like to spend the Easter holidays *au pair* or as a paying guest with a veterinary family in the London area or near to it.

Would any member interested in any of these suggestions kindly get in touch with the General Secretary, B.V.A., 7, Mansfield Street, Portland Place, London, W.1.

The Effect of Feeding Penicillin and Vitamin B_{12} to Mature Debilitated Horses

BY

Captain R. J. CLIFFORD, R.A.V.C.,

G. N. HENDERSON

The Distillers Company (Biochemicals) Ltd.

AND

Major J. H. WILKINS, R.A.V.C.

Introduction

FOLLOWING the reports of the successful use of antibiotic and vitamin supplements in the rations of farm animals, particularly pigs and poultry, the possibility of their use in the rations of working horses was considered. Very little published work was available on this subject; the only recent reference being the work of Taylor, *et al.* (1954), on the use of chlortetracycline in the rations of thoroughbred foals. As pointed out by Worden (1952), early work on the use of antibiotic residues in the nutrition of animals was undertaken in the first instance to establish an alternative source of vitamin B_{12}, and the growth-promoting activity of the antibiotic itself was discovered when it was found that on diets containing adequate vitamin B_{12} from other sources, the antibiotic residue gave an additional growth response. The work of Taylor and his colleagues appeared to involve the use of pure chlortetracycline, and no mention is made in that paper of the possible effects of vitamin B_{12}. It is generally accepted that animals relying for part of their nutritional requirements on biosynthesis in the alimentary canal, *e.g.* ruminants and horses, are less likely to benefit from the administration of antibiotics by mouth in view of the possible adverse effects on the flora of the alimentary canal. In view of the lack of consistent results following the administration of antibiotics to ruminants for the promotion of growth, and the suggestion that this inconsistency may be due to an adverse effect on the flora of the rumen, it was considered possible that similar effects might occur in the caecum of the horse with a corresponding lack of response.

Administration of vitamin B_{12} by injection has been employed in veterinary practice in both small and large animals for a variety of conditions mostly concerned with improvement in general tone of the animal under treatment. The value of oral administration of vitamin B_{12} was, at one time, in question by medical opinion, but it would appear that some tonic effect can be obtained by its use in humans. In animal subjects the importance of vitamin B_{12} as a constituent of the animal protein factor has been widely described, and practical value has been seen following administration to growing stock kept on rations containing mainly vegetable protein with variable amounts of animal protein.

Early empirical observations of the effect of vitamin B_{12} supplement added to the rations of debilitated horses were made on the late Mr. A. Glenister's "Sheila's Cottage" and on some hunters belonging to Capt. the Hon. John Brooke. In these cases considerable benefit appeared to be derived, but little or no objective information was obtained (Brooke, 1953). Burrell (1953) and Pincher (1954) draw attention to the beneficial effects observed following the use of vitamin B_{12} for new-born and yearling foals and in-foal mares. Administration of vitamin B_{12} incorporated in a general vitamin and mineral supplement produced better general health and resistance to disease. Similar "tonic" effects have been demonstrated with dairy cattle (Crone, 1954). If any conclusion can be drawn it is that B_{12} is a stimulant for the bacteria of the alimentary canal which in both cattle and horses play an essential part, directly and indirectly, in the process of digestion.

In planning this trial, it must be emphasised that interest lay primarily in the improvement of condition of the animals concerned, all of whom were mature horses. Growth response was therefore not a factor. It was decided to use penicillin supplement alone at the outset, with the possibility of substituting vitamin B_{12} if response to penicillin was not satisfactory.

Part I

Penicillin

Materials and Methods

Twelve horses, all in approximately the same condition, were selected for the purpose of this experiment. All showed some degree of poor physical condition with staring coats, prominent ribs and drop over the hind quarters. At this stage, one of us (J. H. W.) acted as judge in recording condition according to the following plan:—2, very poor; 4, poor; 6 fair; and 8, good.

Assessment of the animals was made on March 25th, 1955, and is shown in Table I under the appropriate date; the odd numbers represent an intermediate stage of condition.

The animals were divided into two groups, A and B, as nearly similar as possible. Group A received the normal ration and served as a control, and Group B received the normal ration plus penicillin feed supplement containing 1.025 million units of penicillin (the equivalent of 1 gramme of procaine benzyl penicillin) in 1 lb. of distillers' spent yeast. This spent yeast base contains, in addition to vitamins of the B complex, 40 per cent. of good quality protein, though at the levels fed, it was not felt to be of great significance in the final results obtained. Each animal received 1 oz. of this supplement per day for nine weeks.

Husbandry

Conditions of management and housing of the two groups were kept similar so far as possible, and before the trial began, all teeth requiring attention

TABLE I

GROUP A

Name	Age	Condition	(Maximum 8)
	Years	25.3.55	27.5.55
Ernest	6	2	3
Sandra	10	4	4
Ann	11	4	4
Jane	10	5	5
Marjorie	11	4	4
Betty	13	4	4

GROUP B

Name	Age	Condition	
	Years	25.3.55	27.5.55
Sandy	9	2	2
Bob	6	1	2
Jimmy	10	3	3
Jack	14	2	2
Violet	11	5	5
Sara	6	5	5

were rasped and phenothiazine was administered in six doses of 5 grammes to eliminate, as far as possible, any effects caused by differing worm burdens. Work carried out by the animals was identical, consisting of two hours walking and trotting exercise each day. Daily rations for both groups were:—6 lb. oats, 1½ lb. bran and 15 lb. hay.

The analysis of these constituents is shown in Table II.

Administration of Penicillin Supplement

Animals in Group B received 1 oz. of the penicillin supplement per day mixed in the bran ration and given at the noon feed. All six animals cleared up their rations and the supplements appeared to be of satisfactory palatability.

Records

At first, an attempt was made to weigh the animals in order to assess the improvement in condition. This was found to be unsatisfactory from a practical point of view and was therefore discontinued. Change in "condition" was left to the assessment of J. H. W., who did not see the animals, other than at judging times, during the course of the experiment. This personal assessment of "condition" was felt to be more important than growth or increase in weight, since improvement in "condition" was the main aim of the experiment. The assessment at the end of the experiment on May 27th, 1955, was made without reference to the original assessment at the beginning of the experiment on March 25th. This is shown in Table I under the appropriate date.

Part II

Vitamin B_{12}

In view of the comparatively poor response obtained with penicillin supplementation, it was decided to substitute the vitamin B_{12} supplement, and a second experiment was started on June 3rd, 1955.

Materials and Methods

In the intervening week all teeth were examined and rasped where necessary and phenothiazine administered. Vitamin B_{12} supplement containing 15 microgrammes vitamin B_{12} per gramme (6.8 mg. per lb.) in 1 lb. of distillers' spent yeast, was used. Twelve horses were selected for the trial, and it was decided that no controls would be maintained as the first assessment of condition acted as a measure of improvement *per se*. Photographs of all 12 animals were taken at this stage. Table III shows the assessment of condition on June 3rd, 1955, before the administration of B_{12} under the appropriate date. The animals marked (P) in this table had taken part in the original penicillin trial and received penicillin supplement.

Husbandry

Rations were standardised for all animals at the following daily level:—10 lb. oats, 1½ lb. bran and 11 lb. hay. Work for all animals was the same, namely, two hours' exercise and road work at maximum trotting speed per day.

Administration of Vitamin B_{12} Supplement

Half an ounce of the B_{12} supplement was fed daily to each animal in the bran ration at the noon feed. All the animals cleared up their rations indicating that palatability was satisfactory. It was realised

TABLE II

CHEMICAL ANALYSIS

Laboratory number		Moisture (loss at 100° C.) per cent.	Protein (N 6·25) per cent.	Oil (direct extraction) per cent.	Ash per cent.	Fibre per cent.	Carbohydrates (by difference)
Hay	33/7045	11·40	8·63	0·60	6·10	32·6	40·67
Oats	33/7046	10·00	7·79	6·50	3·74	9·65	62·27
Bran	33/7047	11·38	13·75	3·24	5·58	5·19	56·86

VITAMIN ASSAY

	Riboflavin as μg/g.	B12 as μg/g.
Hay	6·85	0·013
Oats	1·0	less than 0·001
Bran	2·95	less than 0·001

Jimmy (right) and Jack (left) aged 10 and 14 years respectively photographed on June 1st, 1955 before administration of Vitamin B_{12} Supplement. Both these animals had received penicillin in the previous trial.

Jimmy (right) and Jack (left) photographed on July 26th after administration of Vitamin B_{12} Supplement for eight weeks. Showing improvement in general appearance and bodily condition.

Violet (right) and Sandra (left) aged 11 and 10 years respectively photographed on June 1st before administration of Vitamin B_{12} Supplement. Violet had received penicillin in the previous trial.

Violet (right) and Sandra (left) photographed on July 26th after administration of Vitamin B_{12} Supplement for eight weeks. Violet showed no improvement in condition, and this may have been due to a concurrent infection of the hoof of a chronic suppurative nature.

that improvement in the rations of the animals was likely to detract in some way from the significance of the trial, but this increase was thought necessary since the animals were in such poor condition, and they were required to take part in their normal activities during the course of the experiment.

Records

Administration was continued until July 26th, 1955, and the assessment of condition was made and final photographs taken. Table III shows the improvement in condition observed under the appropriate date.

Discussion

The question of whether certain vitamins are required in the rations of horses is very difficult to answer and published information is meagre in the extreme. The National Research Council of America

TABLE III

Name	Age	Condition (Maximum 8)		Change
	Years	3.6.55	26.7.55	
Jack	14	2 (P)	5 (P)	up 3
Jimmy	10	3 (P)	6 (P)	„ 3
Sandra	10	4	8	„ 4
Violet	11	5 (P)	4 (P)	down 1
Bob	6	2 (P)	5 (P)	up 3
Jane	10	4	6	„ 2
Ernest	6	3	5	„ 2
Gladys	7	5	7	„ 2
Betty	13	4	7	„ 3
Ann	11	4	8	„ 4
Sandy	9	2 (P)	5 (P)	„ 3
Joe	15	5	8	„ 3

publication on horse rations states, " On the basis of present information it would appear that the nutrition and feeding of horses with respect to vitamins is less of a problem than it is with some other domestic animals. However, this impression may be due to the meagre amount of information available on the nutritional requirements of the horse." Bacterial synthesis of many B complex vitamins in the caecum has been demonstrated by Carroll, Goss & Howell (1949) but the absorption of the vitamins has been questioned. On the basis of this work we suggest that the B_{12} requirement of the horse is normally met by intestinal synthesis but that this synthesis may not always be adequate. It is probable that B_{12} is required in the metabolic processes of all higher animals and we feel justified, therefore, in inferring that the caecum normally provides the horse with adequate amounts. The modification of the intestinal flora by penicillin was evidently not favourable in this case especially since those animals which received penicillin prior to vitamin B_{12} administration showed less benefit as a group than those which received only the vitamin B_{12} supplement. Vitamin B_{12}, whether directly by correcting a deficiency or indirectly by stimulating the flora was effective. Fish meal has long been held in esteem as a tonic for poor horses and its B_{12} content may well be relevant. We should not lose sight, however, of the fact that the effect of the B_{12} may have been indirect (*via* the flora of the intestine) and the actual deficiency, so far as the horse was concerned, may not have been B_{12} but some other product of bacterial synthesis in the gut.

Conclusion

(a) The use of penicillin supplement alone over a period of nine weeks had no effect on the visible condition of six debilitated horses, kept and worked under identical circumstances, on a comparatively low protein diet.

(b) There was a distinct visible improvement after eight weeks' feeding of the B_{12} supplement with a higher energy diet. As the increase in the rations applied to all the horses the standard was thus kept the same and any differential increase or decrease of condition could be reasonably regarded as important.

(c) The average improvement in the horses receiving B_{12} supplement alone can be represented by a factor of 2.86 whereas those which had had penicillin supplement in Experiment 1 (P) plus B_{12} supplement can be represented by factor 2.2. While it must be emphasised that this can only be regarded as a pilot experiment the results seem sufficiently significant to suggest that oral administration of vitamin B_{12} with higher energy diets is of benefit to horses, and it is hoped that further experiments on the same basis will be carried out using more rigid controls especially with regard to age, diet and weighing.

Acknowledgments.—The authors wish to thank Brigadier A. C. Ralston, Director Army Veterinary Remount Service, for permission to publish this work, The Distillers Company (Biochemicals) Ltd., for supplies of " Distafeed " Penicillin supplement and " Distafeed " Vitamin B_{12} Supplement, and also Mr. J. A. Wakelam for his assistance with some of the nutritional data used.

Hydatid Cysts in a Thoroughbred Mare

BY

WM. C. MILLER and D. POYNTER,

Animal Health Trust, Equine Research Station, Newmarket

Introduction

HYDATID cysts occur in man and a wide range of animals, both domesticated and wild. They have been found in the horse but their incidence in Great Britain is largely unknown.

Some of the cases reported in horses are particularly dramatic. Palat (1883) described a fatality which was due to compression of the aorta caused by a hydatid situated at the base of the left ventricle; the cyst contained only a simple vesicle. Goubaux (1852) noted rupture of the aorta at its origin and recovered three small acephalocysts from the vessel wall. Bollinger (1870) observed two cases in the horse, one in the wall of the common aorta near its bifurcation and the other in the posterior aorta, whilst Raymond (1883) found that hydatid cysts persisted in this host for seven years.

In Britain hydatids in horses cannot be common, since in 54 recent *post-mortem* examinations conducted on adult horses at the Equine Research Station, they have only been seen once. This gives an incidence of 1.8 per cent., a figure which agrees closely with the 2.1 per cent. found by Lorincz, Burghoffer & Bodrogi (1932) in Budapest and the 1.8 per cent. found by Benoit (1935) in the Lausanne abattoirs of France.

Recently Gray (1953) found fertile cysts in the liver and lung of an aged hunter in Britain, and Grant (1954) discovered three fertile cysts in the liver of another hunter in Suffolk. These are the only cases in horses which we have been able to verify during the past few years.

There are, however, recent cases on record from other parts of the world. Ibscher (1935) reported one from a horse in Germany and Brachetka (1943) found a cyst in the gluteal musculature of a horse from the same country. Blount & Parkinson (1945) discovered a solitary fertile cyst in the liver of a 15-year-old gelding and a number of " half-crown " size fertile cysts in a similar situation in another case. No mention of the country of origin was made, but both of the animals were army horses.

Case History

Owing to the relative infrequency of hydatid cysts in horses in Britain at present, it seems desirable to record a case recently encountered at this Station.

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The animal was a 15-year-old Thoroughbred brood mare, the dam of a number of successful winners. She was first seen in July, 1950, when suffering from an acute attack of severe respiratory distress of unknown origin. The temperature was raised to 104° F., pulse fast and strong, there was a painful swelling on the left side of the pharynx and a foul smelling discharge from the right nostril. The mare was not feeding but would drink water and chew a few mouthfuls of grass. Swallowing was difficult and some foodstuffs was returned through the nostrils. Damage to the hyoid bone with possible infection of the right guttural pouch was suspected. Later, these suspicions were found to be incorrect. The mare was treated twice daily for three days with 1 mega unit of penicillin and 10 ml. promethazine hydrochloride* (half intravenously and half intramuscularly), and in two days the condition of svere distress had improved. Examination under chloral narcosis with a pharyngolaryngoscope showed an ulcerated area on the right side of the pharyngeal wall near the opening of the Eustachian tube. The nasal discharge and difficulty in swallowing persisted for some 10 weeks and then slowly began to improve. By December (five months after the first symptoms) themare was discharged from hospital. She was feeding well and swallowing was normal. The nasal discharge had completely disappeared.

She was covered in 1951 and 1952, bred normal healthy foals, and showed no abnormal symptoms of any sort until late September, 1954, a little more than four years after her first attack of illness. During this time she retained good general bodily condition, was active, and behaved as a normal Thoroughbred brood mare. In view of the profound tissue changes in liver and lungs (see later) this symptomless period is remarkable.

In late September, 1954, the mare quite suddenly developed partial bilateral paraplegia. She became recumbent but with help could rise to her feet and stand for a time. Co-ordination of the muscles of the hind quarters was poor, but neither hyperaesthesia nor anaesthesia could be determined over loins or quarters or at any part of the hind limbs. During the next two days the paraplegia became progressively more established so that even with help the mare could not rise to her feet, and it was decided to destroy her on September 30th, 1954.

Post-mortem Findings

Post-mortem examination was carried out immediately. The liver was found to be heavily infected with hydatid cysts (Fig. 1). In all, 112 large cysts were visible on the surface and others became apparent when the organ was sliced, these being completely embedded in hepatic tissue. The left lobe bore a cluster of some 20 individual cysts, many with exogenous daughter cysts (see Fig. 2). In this part of the organ the liver tissue had become almost completely destroyed and only small islands of hepatic tissue could be distinguished between individual cysts. Since it was desired to retain some of the cysts as museum specimens they were not all opened. In all, 23 cysts were examined and all were found to be unilocular and fertile. One contained 34,400 individual scolices and another larger cyst only 13,650. The size of a cyst does not, therefore, seem to be proportional to its capacity to form scolices.

The lungs contained 15 cysts, of which nine were opened, these being unilocular and only one being infertile.

In view of the mare's earlier history a careful dissection of the pharynx was undertaken, but no lesions other than a certain amount of scar tissue in the right pharyngeal wall were found. Whether there may have been a hydatid cyst present in this region at an earlier stage remains unknown.

In an endeavour to explain the cause of the paraplegia, the spinal cord was removed from the thoracic, lumbar and sacral regions. The only gross abnormality noted was an oval depressed area extending from just posterior to the level of origin of the fourth lumbar ventral nerve roots backwards to beyond the origins of the fifth lumbar roots. At the sides of this depression there were three subarachnoid haemorrhages, the largest about 2 x 1 cm. in size. No definite signs of hydatid cyst were found. Microscopic examination of sections of the spinal cord showed a series of small haemorrhages in the white matter, mostly above the dorsal commissure but extending into the grey matter towards the central canal. Considerable destruction of cellular integrity around these haemorrhages was found when sections taken cranial to and caudal to the lesion were compared with sections from the lesion itself. No microscopic evidence was found in the dura or in the arachnoid structures of any tissue resembling hydatid cyst wall.

In performing the difficult task of removing the spinal cord intact from the spinal canal it is inevitable that much destruction of the spinal arches of the vertebrae takes place. The general appearance of the depressed lesion in the lumbar part of the cord, its size and position, taken together with the clinical evidence, suggests that the terminal paraplegia might have been due to the development of a hydatid cyst, external to the dura mater, causing increasing pressure on the lumbar bulb at the level of the fourth lumbar vertebra. If such a cyst was present it would have been destroyed during removal of the cord.

The caecum was found to contain 504 individuals of *Anoblocephala perfoliata* and these had provoked ulceration of the caecal mucosa.

Discussion

To judge from published accounts, the incidence of hydatid cysts in horses in Britain is low; a search of the literature during recent years has failed to reveal any report of its occurrence. On the other hand, those who work in the abattoirs are familiar with a condition of "cysts in the liver" in horses slaughtered for human and animal consumption and the circumstantial evidence is that hydatid cysts may not be so uncommon as is generally believed.

In the case described, it is not known at what time infestation took place, but during the four years when the mare was under our observation, at no time were any clinical symptoms shown which could be

* Phenergan.

MILLER, WM. C., & POYNTER, D.—HYDATID CYSTS IN A THOROUGH-BRED MARE

FIG. 1.—The general appearance of the visceral surface of the liver showing the extent and severity of hydatid cyst formation. Photograph taken *in situ*. Part of the cystic mass at A is shown in Fig. 2, enlarged.

FIG. 2.—A conglomeration of hydatid cysts found in the left lobe of the liver. Exogenous budding can be distinguished. The specimen illustrates well the phenomena of pressure atrophy, small islands of hepatic tissue can be seen between some of the individual cysts. This is an enlarged view of the part marked 'A' in Fig. 1.

referred to liver dysfunction. It is quite certain that during the latter part of this period, certainly during the last year or more, the extensive destruction of liver tissue and its replacement by developing cysts had been in progress. Equally, the 15 cysts present in the lungs had produced no respiratory symptoms recognisable externally during the period.

The enormous powers of adaptation of the equine liver without disturbance of essential function, are well illustrated by the case described. The mare had bred a foal as late as 1953/54 and the liver would have been subjected to the extra stress of pregnancy while active cyst development, which is known to be a slow process, was in progress.

There is no very clear evidence of the relative incidence of infestation in dogs with *Echinococcus granulosus*. In cats the parasites die before reaching sexual maturity and those hosts cannot, therefore, be incriminated in cases of hydatid cysts. Reference to those familiar with canine clinical conditions indicates that either the incidence is low or the presence of this tapeworm is not normally reported. At the Canine Research Station of the Animal Health Trust, Skulski (1955) reports that out of 200 *post-mortem* examinations he has found *Echinococcus granulosus* in four dogs. These dogs were not necessarily a representative cross-section of the general dog population of the country, since they included a considerable number of greyhounds which had been used for racing purposes. Equally the incidence of this tapeworm in the wild carnivores, especially foxes, is also unknown. Both dogs and foxes are known to be hosts of *Echinococcus granulosus*.

To the clinician, and from the point of view of clinical equine pathology, the symptomless characteristics of the last four years of this mare's life and especially the last year, are of interest, in view of the extensive damage to the liver and the presence in it of more than 112 hydatid cysts.

Summary

A case of severe hydatid cyst formation in a Thoroughbred brood mare is reported and certain of the clinical symptoms shown by the animal are discussed.

The *post-mortem* examination of 54 adult horses conducted at the Equine Research Station during the last few years has revealed hydatid cysts in one. This gives an incidence of 1.8 per cent., which, in view of the abattoir evidence, may be lower than the actual incidence.

Acknowledgments.—We are grateful to Mr. E. Brayley Reynolds, O.B.E., M.R.C.V.S., and to Mr. R. C. Crowhurst, O.B.E., M.R.C.V.S., who introduced the case to us, for their help and co-operation.

We would also like to acknowledge the assistance of Mr. R. K. Archer, M.A., M.R.C.V.S., who took the photographs, and Dr. Sheila Willmott who drew our attention to several important references.

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Prophylactic Treatment of Enzootic Pneumonia (Virus Pneumonia) in Pigs with Tetracycline and Oxytetracycline*

BY

NILS LANNEK and STIG BÖRNFORS

Department of Medicine, Royal Veterinary College, Stockholm

ENZOOTIC pneumonia (virus pneumonia) is generally accepted as the most important swine pneumonia disease in northern Europe, Great Britain and Australia. The causing agent is possibly a large virus (Betts, 1952; Lannek & Wesslén, 1955) which is sensitive to the tetracycline group of antibiotics (Betts, 1952; Wesslén & Lannek, 1954). Prophylactic treatment of pigs with chlortetracycline† was shown to inhibit the development of pneumonia (Börnfors, 1954).

In the present paper the results of three experiments are described.

In the first experment tetracycline and oxytetracycline, respectively, were used partly in a large "therapeutic" dose and partly in a small one (100 times less).

In the second experiment tetracycline in doses lying between these two outer limits was applied aiming to give a more detailed titration of the effective dose. The conditions in experiments 1 and 2 were otherwise as nearly equal as possible.

Experiment 3 was a field trail with oxytetracycline given continuously in small doses during a long time.

Experiment 1

Material and Methods

Forty pigs, six to seven weeks old, were collected from herds known to be free from pneumonia and transferred to the Veterinary College on February 8th. They were weighed and divided into five groups, each containing eight pigs. The group weights were made as nearly equal as possible. All groups were placed in the same room, each in one pen.

On February 9th, 1955, all pigs were inoculated intranasally with 5 c.c. of a suspension which had been prepared on the previous day in the following way.

*Terramycin
†Aureomycin

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Three pigs weighing about 35 kg. were taken from a herd which was heavily affected with pneumonia. The presence of pneumonia was confirmed by X-ray and the pigs were killed by intravenous injection of pentabarbitone sodium†. The lungs were removed aseptically, and the pneumonia areas cut out and ground with sand. Physiological saline containing 1,000 I.U. of penicillin and 100 γ of streptomycin was added, making a 10 per cent. suspension. This suspension was kept overnight in the refrigerator. After decanting the supernatant was used for innoculation.

From the same pneumonia-affected herd were taken five other pigs of a similar size and in which the presence of pneumonia was also evident from X-ray examination. To each group of eight pneumonia-free pigs was added one of these pigs with spontaneous pneumonia. Thus, during the whole experiment the originally pneumonia-free pigs were reared together with pigs with spontaneous pneumonia in order to secure also a natural infection.

Prophylactic treatment was given to four of the five groups during the whole experiment from February 9th to March 14th. The antibiotics were given twice daily mixed in the food. The amounts of antibiotics are included in Table I.

The pigs were fed twice daily a mixture of garbage (60 per cent.), meal mixture (30 per cent.), and skimmed milk (10 per cent.). At slaughter, the lungs were collected, labelled and examined.

The results are given in Table I.

TABLE I

RESULTS OF PROPHYLACTIC TREATMENT WITH TETRACYCLINE AND OXYTETRACYCLINE. THE EXPERIMENT WAS STARTED ON FEBRUARY 9TH. THE PIGS WERE SLAUGHTERED ON MARCH 14TH

Group number	Daily treatment	Average pig body-weight in Kg. on Feb. 8th	Average pig body-weight in Kg. on March 14th	Number of pneumonic lungs/total number of lungs
1	2 × 2,000 mg. of tetracycline	15·1	32·2	0/8
2	2 × 2,000 mg. of oxytetracycline	15·4	32·7	0/8
3	2 × 20 mg. of tetracycline	15·1	30·5	8/8
4	2 × 20 mg. of oxytetracycline	15·1	29·7	6/7*
5	none	15·7	29·3	8/8

* The lungs of one pig were lost at the slaughter.

Experiment 2

Material and methods were principally the same as in experiment 1. The same number of pigs were used. The inoculation was done on April 5th and the slaughter and examination of lungs on May 9th.

The results are given in Table II.

Experiment 3

Material and Methods

This experiment was not carried out at the College but at a heavily pneumonia-affected farm near Stockholm.

† Nembutal (Abbott).

TABLE II

RESULTS OF PROPHYLACTIC TREATMENT WITH TETRACYCLINE. THE EXPERIMENT WAS STARTED ON APRIL 5TH. THE PIGS WERE SLAUGHTERED ON MAY 9TH

Group number	Daily treatment	Average pig body-weight in Kg. on April 5th	Average pig body-weight in Kg. on May 5th	Number of pneumonic lungs/total number of lungs
1	2 × 1,500 mg.	17·3	37·5	1/8
2	2 × 1,000 mg.	17·3	37·4	1/8
3	2 × 500 mg.	17·4	34·9	4/8
4	2 × 100 mg.	17·4	35·6	7/8
5	none	17·4	30·7	7/8

Sixty pigs at the age of 10 to 11 weeks were bought from pneumonia-free herds and transferred to the farm on March 5th. Here they were housed in a building together with 400 other pigs of varying ages. The pigs were divided into six groups having 10 in each, placed in pens close to each other. No artificial inoculation was done in this experiment.

Prophylactic treatment was given to four of the six groups from the beginning of the experiment until June 3rd. The pigs were slaughtered between June 17th and July 21st as they gradually reached a bodyweight of about 100 kg. Thus during the last period of two to six weeks no prophylactic treatment was given to any of the pigs.

Results, see Table III, below.

TABLE III

RESULTS OF PROPHYLACTIC TREATMENT WITH OXYTETRACYCLINE IN A FIELD TRIAL. THE EXPERIMENT WAS STARTED ON MARCH 5TH. THE PIGS WERE SLAUGHTERED BETWEEN JUNE 17TH AND JULY 21ST

Group number	Daily treatment	Average pig body-weight in Kg. on March 5th	Average pig body-weight in Kg. on June 3rd	Number of pneumonic lungs/total number of lungs
1	2 × 1,250 mg.	30·9	88·7	0/10
2	2 × 250 mg.	26·5	84·4	3/20
3	2 × 250 mg.	28·0	80·9	3/20
4	2 × 50 mg.	32·9	83·4	3·10
5	none	30·0	77·3	9/20
6	none	29·8	74·2	9/20

Discussion

Attempts to eradicate enzootic pneumonia in pigs have hitherto mainly followed the scheme of isolated rearing outlined by Waldmann (1934,1936 & 1937). The progress in the field of antibiotics during recent years and observations indicating sensitiveness of the enzootic pneumonia virus to some broad-spectrum antibiotics (Betts, 1952; Börnfors, 1954; Börnfors & Lannek, 1955; Penny, 1954; and Wesslén & Lannek, 1954) naturally invite attempts wih antibiotic prophylaxis. If these be successful the decreasing prices of the antibiotics concerned would possibly enable

us to establish an eradication programme along these outlines.

To clarify the associated problems, well controlled experiments at research stations as well as trials in the field are necessary.

The present work was aimed partly to determine the least prophylactic dose of tetracycline and, more roughly, of oxytetracycline under the conditions of the experiments; and, partly, to give some idea of the results of prophylactic treatment with small doses of oxytetracycline in the field.

It should first be concluded that the higher doses of the antibiotics used exerted a marked inhibitory effect on the development of pneumonia. From Tables I and II can be seen that a daily dose of 2 x 1,000 mg. and higher doses of tetracycline were nearly completely inhibitory. If the average bodyweight of the pigs during the whole course of experiments 1 and 2 is roughly estimated at 25 kg., the first mentioned dose would correspond to 10 mg. per kg. of bodyweight. Half this dose gave a 50 per cent. inhibition and one-tenth of the dose exerted apparently no inhibitory influence. The high frequency of pneumonia among the control animals gives evidence of a heavy infection.

It should be noticed that in the treated groups the pigs with original spontaneous pneumonia also were treated, probably with a lessening effect on their spread of virus. This circumstance may have accentuated the differences in pneumonia frequency between the groups. It does not change the conclusions in any principal way, however; and furthermore, all the groups were housed in the same room with apparent possibilities for the agent to be spread not only within the groups but also between them.

In experiment 3 the pigs from the age of about 11 weeks until the slaughter were exposed to the contamination of a rather large pig herd where enzootic pneumonia is stationary. Here the control group showed a considerably lower frequency of pneumonia than did the control groups of experiments 1 and 2. (45 per cent. as against 100 per cent. and 90 per cent.) This may be due to less exposition, or to spontaneous recovery in some pigs as they grow older, or both. In this experiment the highest daily dose of 2 x 1,250 mg. of oxytetracycline gave a complete inhibition. If the average bodyweight of the pigs at the middle of the administration period os approximately taken as 50 kg., the mentioned dose would correspond to 5 mg. per kg. of bodyweight. It is interesting that even a 25-times less dose, 0.2 mg per kg. of bodyweight, seems to have given some degree of inhibition (group 4). This is astonishingly good and may, if it is significant, be explained with the long administration time.

The Tables show a considerably higher bodyweight gain for the treated animals in comparison with the non-treated ones. This effect of feeding antibiotics is well known. It is obvious that the lower frequency of pneumonia in the treated groups must have contributed to this effect.

Summary

The authors examined the prophylactic effect of tetracycline and oxytetracycline given *per os* at enzootic pneumonia (virus pneumonia) in pigs. Two experiments were done at the Veterinary College and one in the field.

In each of the first two experiments 40 pigs were inoculated intranasally with a suspension of pneumonic lungs and were furthermore exposed to continuous "natural" infection by contact with pigs suffering from spontaneous pneumonia. The pigs were slaughtered about four weeks after the beginning of the experiments and the lungs were examined pathologic-anatomically. The results which can be seen in the Tables I and II were briefly:—

Tetracycline in doses corresponding to 20, 15 and 10 mg. per kg. of bodyweight completely or nearly completely inhibited the development of pneumonia. Five mg. per kg. of bodyweight gave a 50 per cent. inhibition and 1 mg. per kg. of bodyweight gave no inhibition.

Oxytetracycline which was tested in doses of 20 and 1 mg. per kg. of bodyweight gave the same effect as tetracycline in corresponding doses.

In the field trial 60 pigs were exposed only to the natural infection of the pneumonia-affected herd where they were kept. Terramycin was administered during the first three months of the experiment but not during the last few weeks before slaughter (two to six weeks depending on when slaughter-weight was reached). A dose corresponding to 5 mg. per kg. of bodyweight resulted in a complete inhibition whereas doses of 1 mg. and 0.2 mg. gave partial inhibition.

Acknowledgments.—We are indebted to AB Astra, Södertälje, for providing the tetracycline used in the present work, and to the Pfizer Co., New York, for providing the terramycin.

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AGRICULTURAL IMPROVEMENT COUNCIL FOR ENGLAND AND WALES

Professor E. G. White, PH.D., F.R.C.V.S., Professor of Veterinary Preventative Medicine in the University of Liverpool, has been appointed a member of the Agricultural Improvement Council for England and Wales to fill the vacancy created by the death of Professor F. Blakemore, D.V.SC., M.R.C.V.S., D.V.S.M.

Professor White was appointed to his present Chair in 1950. Before that he had been lecturer in Pathology at the Royal Veterinary College, London. He was Principal Scientific Officer, Rowett Research Institute in 1946, and Director of the East African Veterinary Research Organisation in 1947.

Current Literature

ABSTRACT

Bloat Can Now be Controlled. SEARS, P. D., & REID, C. S. W. (1955). *New Zealand Dairy Exporter*, September 1st, pp. 51-57.

Bloat is a very important source of loss in New Zealand, actual deaths each year amounting to some thousands of head of cattle and a relatively small number of sheep. Lowered milk production in affected herds is a further consequence.

Work at the Grasslands Division of the Department for Scientific and Industrial Research indicates that in New Zealand, as in Great Britain, the vast majority of bloat is contracted by animals which consume an excess of lush clover. Experimentally, and occasionally in practice, bloat may follow the ingestion of rapidly growing grass, but this is not a factor of comparable importance. Apparently all clovers are capable of producing severe bloat: red, white, subterranean and suckling clovers have all been shown to do so, and there seems to be no difference between pedigree and other strains.

Most outbreaks of bloat tend to occur at an intermediate or " in between " stage of pasture improvement, which is therefore the dangerous one. Bloat is relatively rare on unimproved pasture, and on good pasture in which, following a sound improvement programme based on a constant and uniform return of animal manure, and a fresh balance between grass and clovers—at a much higher total production than in the original unimproved sward. In the intermediate stages, clover dominance may result in cases of bloat, but this should not be allowed to deter the farmer from pushing ahead with his programme. On the contrary, the sooner good grass dominance becomes re-established, the better.

" Frothy " bloat, due to the development of the rumen contents into a tight, sponge-like mass with gas entrapped, is far more prevalent in New Zealand than the " blockage " type of bloat. Some farmers can detect when " bloat is about " from the fact that there is then some extra foaming of the skim milk as it leaves the separator. Frothy bloat may be prevented if foaming of the ruminal contents can be diminished, and anti-foaming agents have been shown to work satisfactorily, provided that an effective level can be maintained within the rumen throughout the time the animal is grazing the dangerous pasture. This level can be sustained only by giving large quantities at relatively frequent intervals or by administering small amounts continuously. The latter is preferred, and in fact control can be exercised by spraying the anti-foaming agent directly on to the pasture.

Of the materials so far employed, emulsified arachis or peanut oil, emulsified tallow and cream (from milk) have been successful, the first especially. The following formulation may be prepared in a high-speed food mixer, although farmers are advised not to attempt their own mixing except in emergencies:—

Arachis oil	10 parts
Water	20 parts
Ten per cent. solution of Lissapol v. 300	1.5 parts.

Other emulsifying agents may be used as alternatives to Lissapol, provided that they are harmless to the animal.

There are two ways of applying the spray, which is diluted accordingly, to pasture. The first, which is recommended for general use, is to spray the whole area to be grazed by the herd at the rate of 3 oz. of of oil or fat per cow. As a variation of this, if some " safe " pasture should be available, the cows are put on the latter at night and allowed to graze on the " bloaty " pasture only during the daytime. On the assumption that about two-thirds of the 24-hour intake will be eaten in daytime, the " bloaty " pasture is sprayed at the rate of 2 to 3 oz. per cow. In either case it is essential to confine the cows to the sprayed area, most simply by using an electric fence set back about a yard from the edge to prevent access to the unsprayed herbage. For good utilisation, and to prevent the cows from skimming the tops which will have most spray on them, and then eating the bottoms later, it is recommended that the pasture be made available in breaks. If the cows are continuously on dangerous pasture, three breaks in 24 hours are suggested. The area to be grazed must be judged conservatively, and must be evenly grazed. Back grazing must not be permitted.

The second method is to use spraying in conjunction with intensive break grazing. Before the cows come into the paddock after milking, a strip of feed about a yard wide, immediately behind the electric fence, is sprayed at the rate of 1 oz. of oil per cow. The cows are brought in, and allowed to reach under the wire and at the sprayed herbage. When they have completely cleaned up the sprayed strip, the fence is moved forward in the usual manner. 1 oz. of oil will give protection for a maximum of four hours, before the end of which time a fresh strip must be sprayed.

Some farmers have adopted a method of putting anti-foaming agents in the water troughs, at a rate again in the case of oil of about 3 oz. per cow per day. Emulsification is not required, and arachis oil is preferred to linseed. If this method is adopted—and the authors regard it as less satisfactory than spraying of the pasture—it is essential to treat all water supplies.

For the treatment of cows that have bloated, 4 oz. of oil, shaken up before use with water, is recommended. In over 100 such individual drenches, the recorded time taken for the bloat to disappear completely has varied from 15 to 60 minutes. Success is far less likely when the cow has actually gone down.

A. N. W.

ESTABLISHMENT OF AN INTERNATIONAL ASSOCIATION OF POULTRY PATHOLOGISTS

In the letter from Dr. R. F. Gordon, published last week, we regret the occurrence of a printer's error. The date for a proposed meeting should have read Friday, January 27th, and not January 20th as printed.

News and Comment

SPECIAL UNIVERSITY LECTURES

A course of two lectures on " The Biology of the Corpus Luteum " by Dr. I. W. Rowlands, M.SC., Agricultural Research Council, Institute of Animal Physiology, Babraham Hall, Cambridge, will be given at the Royal Veterinary College at 4 p.m. on March 5th and 8th. At the first lecture the Chair will be taken by Professor S. Zuckerman, C.B., M.A., M.D., D.SC., F.R.S., Professor of Anatomy in the University of Birmingham.

The lectures are addressed to students of the University of London and to others interested in the subject. Admission is free, and no ticket is required.

VETERINARY SERVICES IN POLAND

We have received the following notes from the Polish Cultural Institute in London:—

Since the war there has been a notable increase in the provision of veterinary clinics in Poland. The concept of such clinics as a public service was a new one; before 1939 there had existed a small number of private establishments, but by 1950 there were 750 veterinary treatment centres, and by 1955 the number had grown to 1,450.

The service covers examinations and prophylactic inoculations, as well as the supervision, twice-yearly, of disinfection of all premises where livestock are kept. Films and lectures are used to publicise methods of combating livestock disease.

The number of animals treated has greatly increased. Last year over 10,000,000 pigs were inoculated against swine erysipelas, compared with 6,000,000 in 1950. Over 12,000,000 head of poultry were inoculated against fowl pest (three times more than were treated in 1950). 300,000 head of cattle, suffering from sterility, were examined and treated, as against 43,700 in 1950. It is claimed that a great achievement in cattle husbandry has been the elimination of foot-and-mouth disease among Polish herds.

NORTH WALES DIVISION ANNUAL DINNER AND DANCE

The annual dinner and dance of the North Wales Division held at Llandudno on January 6th seemed to be more popular and successful than ever. After an excellent dinner the Welsh members of the profession were pleased to hear from their guest of honour, Mr. Morgan Jones, Welsh Secretary of the Ministry of Agriculture, how much their work for animal health was valued by the Ministry. It was recalled that the success of Welsh agriculture was very much bound up with livestock. The President of the B.V.A., Mr. Edward Wilkinson, replied to the toast of " The Veterinary Profession." Mr. Trevor Roberts, the Division's President, proposed the toast of the guests which evoked a witty reply from Mr. Gwylim Hughes of the Pharmaceutical Society.

During the dance which followed, Mr. Forgrave, assisted by Mrs. I. M. Wynne and Mrs. W. O. Jones of the Ladies' Guild, supervised the distribution of many prizes.

THE REGISTER OF VETERINARY SURGEONS

Under Section 25 (3) of the Veterinary Surgeons Act, 1948, the names of the following gentlemen have been removed from the Register of Veterinary Surgeons with effect from January 1st, 1956:—

Ali, Syed Mahmud, 27, Nawab Katra Road, Dacca, Pakistan; Beatty, Philip Vandeleur, Garha, Jubbulpore, India; Caglini, Enrico Alexandro, Sanseverino Marche, Macerata, Italy; Clarke, Raleigh, 364, Church Street, Richmond, Victoria, Australia; Colebatch, Walter John, Hill Rising, Olinda, Victoria, Australia; Henson, George Ernest, c/o Standard Bank of S. Africa, Salisbury, S. Rhodesia; Hu, Tsiang-Pih, P.O. Box 203, Chungking, China; Jastrzebski, Dominik, Lesxno, ul. Paderewskiego 10, woj. Poznan, Poland; Jones, William, Bryn-Owen, Scanlen, P.O. Cradock, Cape, South Africa; Kennedy, George Percival, Bolivar 785, Buenos Aires, Argentine; Leonard, Harry Sidney, 93 Condamine Street, Manley, Sydney, N. S. W., Australia; McCall, David Brown Johnson, 56, Sir Arthur Road, Durban, South Africa; Mangrulkar, Moreshwar Yadeo, Director of Veterinary Services, Nagpur, India; Mills, David William, Picos, Maranhao, Brazil; Mulki, Fouzi Ead, Amman, Jordan; Robson, John, Belmont, Western Australia; Shah, Syed Mubarik Ali, Director of Veterinary Services, Cooper Road, Lahore, Pakistan; Simmons, E. H., 633, Bergen Street, Brooklyn, New York, U.S.A.; Simmons, William Turner, 1125 Commonwealth Ave., Allston, Mass., U.S.A.; Sproston, Henry, Caulfeild P.O., West Vancouver, B.C., Canada; Wazir, Ved Lal, Civil Veterinary Dept., Srinigar, Kashmir, India; Xuto, Chai Saeng, c/o Ministry of Defence, Bangkok, Thailand.

R.C.V.S. LIBRARY ACCESSIONS

AMERICAN SOCIETY OF ANIMAL PRODUCTION. *Western Section*. Proceedings of the Annual Meeting. Vols. 5 and 6, 1954 and 1955.

BLACKBURN, County Borough. Annual Report upon the health of Blackburn for the year 1954-5.

CYPRUS. *Department of Agriculture*. Annual report for 1954. Annexure II Report of the Agricultural Officer (Livestock for 1954).

GOLD COAST. *Department of Animal Health*. Report for the year 1953-4.

GREAT BRITAIN. *Chief Medical Officer*. Report. Part II on the state of the public health, 1954-5.

LOS ANGELES. *County Livestock Department*. Annual Report, 1954-5.

MALAYA. *Veterinary Department*. Report for the year 1954-5.

NEW ZEALAND SOCIETY OF ANIMAL PRODUCTION. Proceedings 15th Annual Conference, 1955.

ONTARIO VETERINARY COLLEGE. Report for the year 1954.

QUEENSLAND. Department of Agriculture & Stock. Annual Report, 1954-5.

UFAW. 29th annual report, 1954-5.

PERSONAL

Birth

PIERSON.—On January 10th, 1956, to Marthe, wife of Eric Pierson, M.R.C.V.S., of Roland House, Headcorn, Kent, a daughter, Janet Gagnon.

R.C.V.S. OBITUARY

We record with regret the death of the following members of the profession:—

BRYDEN, Robert, Westfield, South Leigh Road, Warblington, Havant, Hants, Capt. R.A.V.C. (T.F.) (Retd.). Graduated Edinburgh, May 21st, 1901. Fellow May 4th, 1910. Died January 13th, 1956, aged 80 years.

CRAFT, John Arthur, Henspark, Dulverton, Somerset, Capt. late R.A.V.C. (T.F.). Graduated London, December 15th, 1893. Died January 11th, 1956, aged 86 years.

WILSON, Alex. Arthur, Greenheyes, High Road, South Woodford, E.18. Graduated New Edinburgh, May 24th, 1897. Died January 11th, 1956, aged 86 years.

M. CHARLES BRUNE

The death has been reported, from Paris, of M. Charles Brune, a member of the French Senate and former Minister of the Interior. He began his professional life as a veterinary surgeon in the French Ministry of Agriculture, entering politics after the end of the last war. He held several Portfolios and was the first Senator in the Fourth Republic to become a Minister. There must be few veterinarians who have been appointed to such high offices of state in the countries of their birth.

COMING EVENTS

January, 1956

24th (Tues.). Winter Meeting of the North of Scotland Division, B.V.A., in the Northern Hotel, Aberdeen, 2.30 p.m.

26th (Thurs.). Meeting of the Western Counties Division, B.V.A., at the Rougemont Hotel, Exeter, 2 p.m.

Annual Dinner and Dance of the Victoria Veterinary Benevolent Fund, Northern Division, at Northern Hotel, Aberdeen, at 7.30 p.m.

27th (Fri.). A Special General Meeting of the North of England Division, B.V.A., in Agricultural Lecture Room, King's College, Newcastle upon Tyne, at 2.30 p.m.

February

1st (Wed.). General Meeting of the Sussex Veterinary Society at Old Ship Hotel, Brighton, at 2.30 p.m.

3rd (Fri.). Meeting of the Technical Development Committee, B.V.A., at 7, Mansfield Street, Portland Place, London, W.1, 10.30 a.m., to receive further articles on calf diseases.

Annual General Meeting of the Northern Ireland Division, B.V.A., at Queen's University, Belfast, 7.30 p.m.

8th (Wed.). Meeting of the R.A.V.C. Division, B.V.A., at University of Cambridge, at 12 noon.

10th (Fri.). Annual Ball of the Glasgow University Veterinary Medical Association in the Rhul Restaurant, Sauchihall Street.

17th (Fri.). Annual Ball of the Royal (Dick) School of Veterinary Studies in the Assembly Rooms, George Street, Edinburgh, 8.30 p.m.

22nd (Wed.). Second Meeting of the A.V.T. and R.W's. Scottish Regional Group for the 1955-56 session in the Moredun Institute, Edinburgh, 2.15 p.m.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Ayrshire. Carlaff Farm, Cumnock (Jan. 9).

Cardigan. Llainwen, Tanygroes (Jan. 16).

Denbigh. Lower Eyton Farm, Eyton, Wrexham (Jan. 10).

Derby. Ivy Farm, Pentrich (Jan. 16).

Hants. Manor Farm, Winsor Lane, Woodlands, Lyndhurst (Jan. 10).

Kirkcudbright. Borners Farm, Borgue (Jan. 16).

Lanark. Whitehill Farm, Gartcosh, Glasgow; Dechmont Farm, Cambuslang, Glasgow (Jan. 9).

Leics. Valley View Farm, Leire, Rugby (Jan. 10).

Northants. The Herne Meadows, Oundle, Peterborough; The Lilacs Farm, Helmdon, Brackley (Jan. 16).

Notts. Moor Haigh Farm, Plensley Hill, Mansfield (Jan. 13).

Perths. Ardargie Mains Farm, Forgandenny (Jan. 16).

Wigtown. Barvennan Farm, Newton Stewart (Jan. 12).

Wilts. Biss Farm, West Ashton, Trowbridge (Jan. 9).

Yorks. Thoraldby Farm, Skutterskelfe, Hutton Rudby, Yarmouth (Jan. 9).

Yorks. Manor House Farm, Morton-on-Swale, Northallerton (Jan. 13); Lowe Fell Farm, Woodale, Coverdale, Leyburn; Sinnington Lodge, Sinnington (Jan. 16).

Fowl Pest

Berks. 139, Finchampstead Road, Wokingham (Jan. 10).

Brecon. Ty Newydd, Llandefalle, Talgarth (Jan. 11).

Cardigan. Gellihan, Talgarreg, Llandyssul (Jan. 14).

Carmarthen. Sychant, Newcastle Emlyn (Jan. 9).

Essex. 20, Straight Road, Boxted, Colchester (Jan. 9); Thornwood, Epping (Jan. 10); Brookman's Farm, Lower Dunton Road, Brentwood; Lower Dunton Hall Farm, Bulphan, Upminster; White Lodge, Sandon, Chelmsford (Jan. 11).

Essex. Beaumont Hall, Thorpe-le-Soken, Clacton-on-Sea; Tendennis, Toats More Lane, Stock, Ingatestone (Jan. 13); 36, Hemnell Street, Epping (Jan. 15).

Glos. Lower Westmancote, Bredon, Tewkesbury (Jan. 10).

Hereford. Cartres, Ridge Hill (Jan. 9).

Hereford. St. Botolphs Green, Hereford Road, Leominster; Upper Butts, Croop (Jan. 13).

Kent. Little Bedgebury Farm, High Halden, Ashford (Jan. 11).

Kent. The Bungalow, Bybrook, Ashford (Jan. 13).

Monmouth. 96, King Street, Cwm, Ebbw Vale (Jan. 9); Marshfield House Farm, Marshfield, Cardiff (Jan. 12).

Norfolk. Gunners Farm, Honing, North Walsham (Jan. 11).

Northampton. Allerton House, Isham, Kettering (Jan. 14).

Oxford. Nell Bridge Farm, Aynho, Banbury (Jan. 11).
Pembroke. Somerton, Milton, Tenby (Jan. 14).
Suffolk. Hulver Road, Mutford, Beccles (Jan. 12).
Sussex. 67, Quebec Road, Hollington, Hastings (Jan. 13).

Swine Fever

Devon. Wigham Farm, Morchard Bishop, Crediton (Jan. 12).
Derby. Glasshouse Farm, New Whittington, Chesterfield (Jan. 18).
Hants. 127, Broadway Lane, Throop, Bournemouth. (Jan. 13).
Hunts. Dawson's Yard, Newtown, Ramsey (Jan. 12).
Kent. Yew Tree Farm, Chillenden, Canterbury (Jan. 16).
Lancs. Holmes House Farm, White Carr Lane, Thornton Cleveleys, Blackpool (Jan. 17).
Lincs. Home Farm, Wingland, Sutton Bridge, Spalding (Jan. 14). Outmarsh Farm, Warnfieet St. Mary, Skegness (Jan. 18).
Norfolk. Church Farm, Rockland-all-Saints, Attleborough (Jan. 12).
Norfolk. Gissings Farm, South Green, Hoxne, Diss (Jan. 16).
Suffolk. Green Farm, Barrow, Bury St. Edmunds (Jan. 16).
Surrey. 13, Send Barns Lane, Send, Woking (Jan. 16).
Worcs. Park End Farm, Bewdley (Jan. 14).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Estimates of the Monthly Incidence of Summer Mastitis in England and Wales during 1954 and 1955

Sir,—Following numerous reports from the field during 1954 on the high incidence of summer mastitis in England and Wales, the Milk Marketing Board asked Inseminators and Recorders (N.M.R.) to collect certain information from all farms visited during one week in September of that year. This included the number of dry cows and in-calf heifers affected with summer mastitis, the month of attack and the size of the milking herd.

The material collected did not permit estimates of the monthly incidence of summer mastitis (as defined by farmers) to be made until the changes in herd size from month to month and the ratio of in-milk cows to dry cows and in-calf heifers for different months were available. These statistics have been obtained during 1955 from information collected by the Board's Private Milk Records Fieldsmen in the course of a survey carried out during one week in each month, commencing June, 1955, to estimate the incidence of summer mastitis in dry cows and in-calf heifers and of mastitis in cows in-milk on the day of the visit. A summary of the estimates is as follows:—

Month	1954		1955
	3,525 N.M.R. herds	5,351 A.I. herds	1,200 P.M.R. herds
	Per cent.	Per cent.	Per cent.
June	0·31	0·18	0·26
July	0·85	0·62	0·13
August	1·87	1·59	0·29
September	0·53	0·41	0·50
October	—	—	0·14

The agreement between the estimates from the two samples for 1954 is reasonably close for each of the four months, June to September (inclusive). When compared with the 1955 estimates, however, some large differences are apparent. The proportion of dry cows and in-calf heifers affected with summer mastitis was approximately the same in June and September of both years but the estimates for July and August indicate that the incidence in these months was approximately six times higher in 1954 than in 1955.

The collection of information from Private Milk Records herds is continuing.

We are, yours faithfully,

A. STEWART,
R. A. M. REYNOLDS,
G. F. SMITH,
G. A. VOLK.

Production Division,
Milk Marketing Board,
Thames Ditton,
Surrey.

December 20th, 1955.

Electrical Stunning and Humane Slaughtering of Animals

Sir,—Not being a regular subscriber to THE VETERINARY RECORD, the letter from H. E. Bywater in your issue of the 3rd instant was only brought to my notice this morning.

Mr. Bywater refers to a report which was not made public and which he thinks I may not have seen. He also writes that "one must be excused if one concludes that this report was unfavourable to the arguments raised in support of the humanity of Jewish Ritual Slaughter."

To this I would reply that I did have access to the report and, contrary to Mr. Bywater's assumption, thought the result of the report definitely supported our contentions regarding the Jewish method of slaughter. In fact I refer to this report in my booklet (all editions) in the following terms:—

"More recent precise investigations by electro-encephalographic methods have shown conclusively that following the incision, consciousness is completely lost with *certainty* after not more than a few seconds. Judging from human experience, it is quite certain that the emptying of the blood-vessels of the brain as a result of the incision must immediately reduce consciousness to a very dim level. In this state it is most improbable that even painful stimuli would be appreciated, and actually no such painful stimuli are in fact being applied. Experienced physicians know that there is no more merciful or painless form of death in patients than from a sudden severe haemorrhage. The patient just quietly slips away. We are justified in believing that the animal killed by Shechita suffers a similar painless end."

Yours faithfully,

S. D. SASSOON.

15, Sollershott East,
Letchworth,
Herts.

December 20th, 1955.

The Use of Phenyl-butazone

Sir,—Those members in small-animal practice who are finding, as I am, that phenyl-butazone* is a valuable drug in many cases of arthritis in the dog may be interested in the complete absence of toxicity in two patients which have now been maintained on the drug for well over a year, one in particular at what may be regarded as a high dosage.

Case 1. A nine-and-a-half-year-old Chow Chow bitch, weight about 74 lb. Has been a chronic arthritic for several years, dating initially from meniscal damage in both stifles in youth and spreading subsequently to hips, elbows and shoulders. Various treatments, including gold and ACTH, have given a degree of relief, but by the autumn of 1954 it was becoming obvious that the dog would have to be destroyed before very long owing to progressive deterioration and increasing inability to get about, with frequently an anxious expression assumed to denote more severe pain. This dog is my own and I felt it justifiable to try phenyl-butazone, even if it proved toxic, as the only remaining alternative to euthanasia. Dosage was commenced at 400 mg. daily and within 48 hours there was a marked improvement in general health, spirits and freedom of movement. No side effects were observed and dosage was increased to 600 mg. daily when still further improvement occurred. The bitch has been maintained on this dose of 600 mg. per day now for over 14 months (inevitably occasional doses have been forgotten but sufficiently infrequently as not to affect the general picture). Not only have no toxic symptoms been observed but the bitch is in considerably better health than before the treatment was commenced. The anxious expression has disappeared, she is able to gallop and play in short bursts although she cannot tolerate sustained exercise, and is able to get up stairs and jump on to her bed fairly easily. The voluntary excursion of hip and stifle joints has increased even during recent months, as has ability to remain standing.

Case 2. An eight- to nine-year-old Dachshund. Weight about 18 lb. Treated in March-April, 1954, for arthritis of both hips, at which time the dog could scarcely walk at all. He responded well to gold injection and remained active until December, 1954, when he relapsed. Both stifles were now involved and again the dog had difficulty in walking at all. The owners were considering euthanasia. Phenyl-butazone was prescribed, 100 mg. twice daily, and within three days noticeable improvement had occurred. In 14 days the dog had gained weight and was in every way improved; he could tolerate reasonable exercise. The owners were instructed to use their discretion in reducing dosage until a suitable maintenance dose was established and this is now 100 mg. on alternate days. Obviously 50 mg. daily would be better, but the 100 mg. tablet is the smallest available and it is not suitable for division. Occasional periods of increased dosage at 100 mg. daily are required in this case. No toxicity has been observed.

This is merely an informal note to emphasise absence of toxicity on two dogs, both of which would otherwise definitely have been destroyed long since, which have not only tolerated but have thrived on what appears to be a relatively high dosage of phenyl-butazone for very long periods. Unfortunately, both dogs are now "addicts" in the sense that their condition deteriorates immediately if dosage is interrupted or reduced, but both have undoubtedly been enabled to live happy, if somewhat limited, lives for much longer than had been anticipated.

My thanks are due to Messrs. Geigy Ltd. for generous trial supplies of the drug and for their helpfulness in supplying information.

Yours faithfully,

JOAN O. JOSHUA.

78, Brentway,
Finchley, N.3.

January 10th, 1955.

* Butazolidin, Geigy.

ANNOUNCEMENT

Attention is drawn to an insurance scheme which has recently been made available at moderate terms, to provide indemnity for owners of attested cattle which react to the Tuberculin Test. Ministry of Agriculture compensation, which is based on the untested market value of the animal at the time of test, is limited to a maximum of £100. This compensation may thus differ materially from the maximum attested value of the reactor, and the farmer concerned suffers substantial loss. It is this loss which the insurance is designed to eliminate. Members, particularly those engaged in routine testing, who feel that it would be in the interests of their clients to be in a position to bring this scheme to their notice, should get in touch direct with the originators of the scheme whose announcement appears on another page of this journal.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th December, 1955		26	1	—	145	—	41
Corresponding period in	1954	22	—	—	40	—	51
	1953	20	—	4	64	—	75
	1952	86	—	—	173	—	40
1st January to 15th December, 1955		747	7	8	769	—	1,372
Corresponding period in	1954	325	4	12	757	—	1,387
	1953	589	—	39	926	—	2,653
	1952	1,137	—	495	403	1	828